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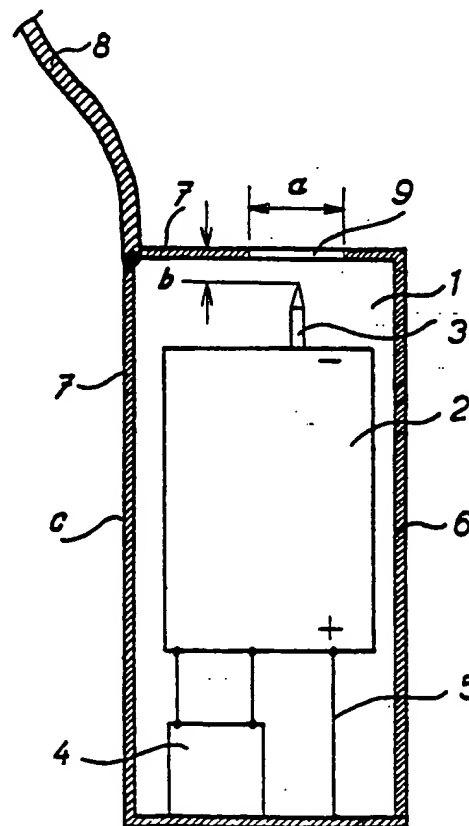


## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <b>(21) International Application Number:</b> PCT/CS92/00007<br><b>(22) International Filing Date:</b> 12 March 1992 (12.03.92)<br><br><b>(30) Priority data:</b><br>PV 710-91                      18 March 1991 (18.03.91)                      CS<br><br><b>(71)(72) Applicant and Inventor:</b> ULBERT, Karel [CS/CS]; Třída svornosti 18, 150 00 Praha 5 (CS).<br><br><b>(74) Agent:</b> FOREJT, Antonín; U Mrázovky 8d, 150 00 Praha 5 (CS).<br><br><b>(81) Designated States:</b> AT (European patent), BE (European patent), CH (European patent), DE (European patent), DK (European patent), ES (European patent), FI, FR (European patent), GB (European patent), GR (European patent), IT (European patent), LU (European patent), MC (European patent), NL (European patent), NO, SE (European patent), US. |           | <b>Published</b><br><i>With international search report.</i>   |

**(54) Title:** A PERSONAL TRANSPORTABLE IONIZER OF AIR**(57) Abstract**

A personal transportable ionizer of air consisting of a case (1) inside which a source of high voltage (2) is arranged, connected with a feeding battery (4) and by its negative pole with an emitter of ions (3), has the case (1) formed by two parts, insulating part (6) and electrostatically conducting part (7) which is electrically connected with the electrostatically conducting neckstrap (8) and with positive pole of the source of high voltage (2). In the upper part facing at application to the mouth of the user the case (1) is provided with the cut (9) for the output of ions, the narrow dimension (a) of which is equal to or larger than is the distance (b) of the point of the emitter of ions (3) from the surface of the case (1). The personal transportable ionizer of air according to this invention guarantees a reliable and continuous delivery of negative oxygen ions, important for improving health condition of sensitive persons as are for instance asthmatics and allergics.



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## Description

### A Personal Transportable Ionizer of Air

#### Technical Field

This invention relates to a personal transportable ionizer of air which is able to deliver continuously to its carrier a medically meaningful concentration of negative oxygen ions during his stay or move in current environments.

#### Background Art

A favourable effect of negative oxygen ions in the air on the state of health of man is doubtless. Because, as a consequence of industrial activities and operation of transport means, the natural volume of these ions in air is very low at present, especially in towns, artificial ionizers are used to improve this situation. Ionizers are generally known and they are current on the market. Most of the ionizers are electrical ones where the emission of ions occurs under the influence of high voltage put on the emitter. The emitters have usually the form of the point of a metal needle, a thin metal wire or they may have other forms. These ionizers are fed either from the public electric network or, as in cars and airplanes, from the board electric line connected to local generator and battery.

In the last time it appeared that there is desirable for persons who are extremely sensitive to the lack of negative oxygen ions, as are for instance asthmatics, to get a certain dose of ions in a continuous way. This was demonstrated on the difference between the results of stay in climatic resorts to which belong especially mountains, sea shore and localities at waterfalls, and between the results of periodical inhalation stays in rooms with artificial high concentration of ions. In climatic resorts the air with increased concentration of ions is breathed-in practically continuously day and night and the

the improvement longer lasting than were the results after the inhalation of artificially produced ions, even if the total doses of accepted ions were identical, as the measurements have shown.

From these facts a need for a transportable personal ionizer of air results which would work reliably and continuously during the intervals when people are out of the space with a sufficient concentration of ions, be they natural or artificial. Commercial ionizers of air mentioned above work usually well, on the other hand, if transportable ionizers with self-contained feeding were tested, they worked irregularly and after some time their action ceased at all.

#### Disclosure of Invention

To achieve a continuous and reliable function of the ionizer with self-contained feeding it is necessary to arrange, as we have determined experimentally that the ions reach the face of the user in maximum number and that a closed electric circuit exists between his body and the positive pole of the source of high voltage in the ionizer. Then a small number of ions escaping aside does not disturb the function of the ionizer because an ohmic leakage between the user and the surroundings, necessary for closing this extremely small current, is always present.

The object of this invention is the personal transportable ionizer of air consisting of a case inside which the source of high voltage is arranged, further there are inside the feeding battery and emitter of ions, and this personal transportable ionizer of air has, according to this invention, the case formed from two parts, namely from the insulating part and the electrostatically conducting part. The electrostatically conducting part, facing to the body of the carrier during application, is electrically connected to the electrostatically conducting neck-strap and the positive pole of the source of high voltage.

In the upper part facing to the mouth of the user during application, the case is provided with an oblong cut for the

than is the distance of the point of the emitter of ions from the surface of the case. The whole case may be from insulating material if a part of this case facing to the user is surface-treated, for example by paint, galvanization, chemicals or vacuum deposit, to be electrostatically conductive.

The function of the personal transportable ionizer of air according to this invention is as follows: After insertion of the feeding battery, high negative voltage appears on the point of the emitter of ions which produces ions escaping from the cut in the case. Due to the cooperation of insulating and electrostatically conducting parts of the case and due to geometric relations between the emitter of ions and the cut in the case, high portion of ionic emission in the direction to the face of the user is achieved. The electrostatically conducting neck-strap mediates the closing of electric circuit for the charged particles without attracting and catching a substantial part of emitted ions.

#### Example

The invention is elucidated on the accompanying Figure. The personal transportable ionizer of air consists of the case 1 into which the source of high voltage 2 is inserted and this source of high voltage 2 is connected with the feeding battery 4 as well as by its negative pole with the emitter of ions 3. The case 1 is formed from two parts, the insulating part 6 and the electrostatically conducting part 7 which is through the conductor 5 connected to the positive pole of the source of high voltage 2 placed inside the case 1. The electrostatically conducting part 7 of the case 1 is further electrically connected with the electrostatically conducting neck-strap 8. The case 1 is in its upper part, facing at application to the mouth of the user, provided with the cut 9 for the output of ions. The dimension of the narrow dimension a of the cut 9 is equal to the distance b of the point of the emitter of ions 3 from the surface of the case 1. The letter c in the Figure denotes the side of the case 1 facing to the user.

this example worked continuously and reliably with unchanged output, if hanged on the neck of the user.

#### Industrial Application

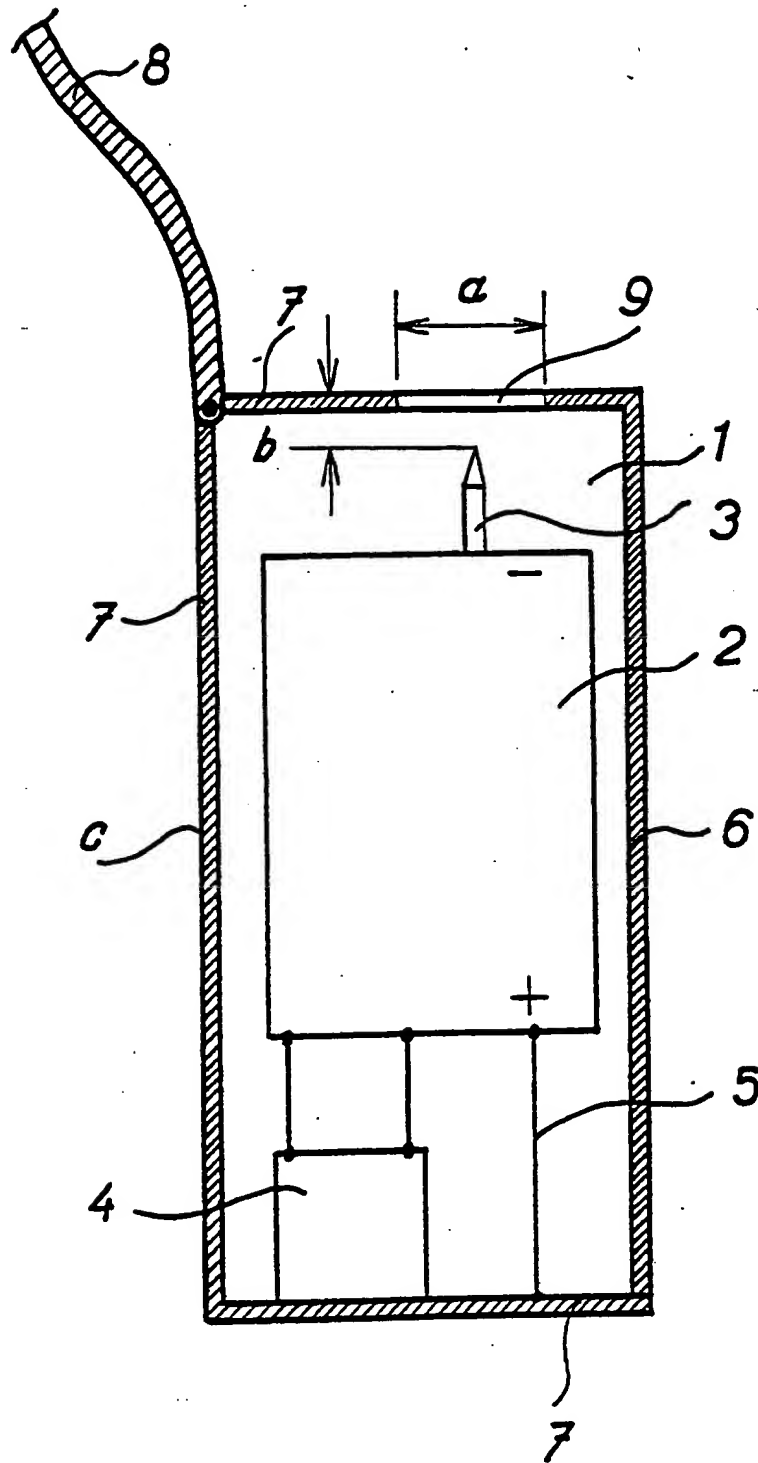
The personal transportable ionizer of air according to this invention is suitable for industrial production and is applicable on each place where people stay or move in the environment with very low or zero concentration of negative oxygen ions in the air.

Claims

1. A personal transportable ionizer of air consisting of a case, in which a source of high voltage, a feeding battery and an emitter of ions are arranged, wherein the case (1) is formed from two parts, the insulating part (6) and the electrostatically conducting part (7) which is electrically connected with the electrostatically conducting neck-strap (8) and the positive pole of the source of high voltage (2), and in the upper part facing during application to the mouth of the user, the case (1) is provided with the cut (9) for the output of ions, the narrow dimension (a) of which is equal to or larger than is the distance (b) of the point of the emitter of ions (3) from the surface of the case (1), the emitter of ions (3) being electrically connected to the negative pole of the source of high voltage (2).

2. The personal transportable ionizer of air of claim 1, wherein the case (1) is formed from insulating material, a part of which (c) facing to the user, is surface-treated for electrostatic conductivity.





# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/CS 92/00007

|  |                        |                       |                        |                                |  |
|--|------------------------|-----------------------|------------------------|--------------------------------|--|
| <b>I. CLASSIFICATION OF SUBJECT MATTER</b> (If several classification symbols apply, indicate all) *<br>According to International Patent Classification (IPC) or to both National Classification and IPC<br>IPC <sup>5</sup> :      A 61 M 15/02  |                        |                       |                        |                                |  |
| <b>II. FIELDS SEARCHED</b><br><div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">Minimum Documentation Searched †</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black; padding: 5px;">           Classification System           </td> <td style="width: 50%; border-bottom: 1px solid black; padding: 5px;">           Classification Symbols         </td> </tr> <tr> <td style="padding: 5px;">           IPC<sup>5</sup>      :      A 61 M         </td> <td></td> </tr> </table> <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">Documentation Searched other than Minimum Documentation<br/>to the extent that such Documents are included in the Fields Searched *</div> |                        | Classification System | Classification Symbols | IPC <sup>5</sup> :      A 61 M |  |
| Classification System  | Classification Symbols |                       |                        |                                |  |
| IPC <sup>5</sup> :      A 61 M   |                        |                       |                        |                                |  |

| III. DOCUMENTS CONSIDERED TO BE RELEVANT* |  |                          |
|---|--|--------------------------|
| Category *                                | Citation of Document, ** with indication, where appropriate, of the relevant passages ††   | Relevant to Claim No. ‡‡ |
| A   | GB, A, 1 045 883<br>(S.J. KERR) 19 October 1966<br>(19.10.66),<br>see especially fig. 1,2;<br>page 1, line 42 - page 2,<br>line 40.<br>---           | 1                        |
| A   | AT, B, 281 271<br>(CHEMETRON) 11 May 1970<br>(11.05.70),<br>see especially fig. 1-3;<br>page 1, line 37 - page 2,<br>line 57.<br>---                 | 1                        |
| A   | DD, A, 129 166<br>(G. HALBEDL et al.)<br>04 January 1978 (04.01.78),<br>see especially fig.; page 3,<br>last paragraph - page 4,<br>line 20.<br>---- | 1                        |

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**IV. CERTIFICATION**

Date of the Actual Completion of the International Search  
07 May 1992

Date of Mailing of this International Search Report  
01.06.92

International Searching Authority

Signature of Authorized Officer

## ANHANG

zum internationalen Recherchen-  
bericht über die internationale  
Patentanmeldung Nr.

## ANNEX

to the International Search  
Report to the International Patent  
Application No.

## ANNEXE

au rapport de recherche inter-  
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In diesem Anhang sind die Mitglieder  
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|--|--|--|--|
| GB A 1045883   |  | keine - none - rien  |  |
| DD A 129166  |  | keine - none - rien  |  |
| AT B 281271  |  | keine - none - rien  |  |